

WHAT IS CLAIMED IS:

1. A smokeless cylinder for a muzzle-loading revolver, the cylinder adapted to allow the use of smokeless gun powder to fire the revolver, comprising:  
a cylinder body having a muzzle end and a breach end, the cylinder body defining therein a number of chambers, each chamber including a projectile portion opening at the muzzle end and having a first diameter sized to accommodate a particular caliber projectile, a propellant portion having a second diameter smaller than the first diameter, and a primer portion opening at the breach end and having a third diameter larger than the second diameter sized to accommodate a primer; and  
a cylinder cap having captured therein the number of linearly translatable firing pins, the cylinder cap being removably positioned on the breach end of the cylinder body.
2. The smokeless cylinder of claim 1, wherein each chamber includes a shoulder between the projectile portion and the propellant portion.
3. The smokeless cylinder of claim 2, wherein the shoulder forms a conical surface transition between the larger first diameter of the projectile portion and the smaller second diameter portion of the propellant portion.
4. The smokeless cylinder of claim 1, wherein the cylinder cap is held in rotational position relative to the cylinder body by a locating pin.
5. The smokeless cylinder of claim 1, wherein each firing pin is positioned within the cylinder cap by a faired.
6. The smokeless cylinder of claim 1, wherein the cylinder cap includes a plurality of ratchets in a breach end thereof.
7. The smokeless cylinder of claim 1, wherein the cylinder cap is axially translatable relative to the cylinder body when positioned thereon.

8. The smokeless cylinder of claim 1, wherein the projectile portion and the primer portion of each chamber are axially offset from one another.

9. The smokeless cylinder of claim 8, wherein the primer portion and the propellant portion are axially aligned.

10. The smokeless cylinder of claim 1, further comprising a loading plate adapted to cover the primer portion openings on the breach end of the cylinder body upon removal of the cylinder cap to facilitate muzzle loading of the cylinder body.

11. A muzzle-loading revolver, comprising:

a frame;

a barrel;

a trigger;

a hammer; and

a cylinder having a cylinder body having a muzzle end and a breach end, the cylinder body defining therein a number of chambers, each chamber including a projectile portion opening at the muzzle end and having a first diameter sized to accommodate a particular caliber projectile, a propellant portion having a second diameter smaller than the first diameter, and a primer portion opening at the breach end and having a third diameter larger than the second diameter sized to accommodate a primer, and a cylinder cap having captured therein the number of linearly translatable firing pins, the cylinder cap being removably positioned on the breach end of the cylinder body.

12. The muzzle-loading revolver of claim 11, wherein each chamber includes a shoulder between the projectile portion and the propellant portion, the shoulder forming a conical surface transition between the larger first diameter of the projectile portion and the smaller second diameter portion of the propellant portion.

13. The muzzle-loading revolver of claim 11, wherein each firing pin is radially positioned within the cylinder cap to axially align with the hammer.

14. The muzzle-loading revolver of claim 11, wherein the cylinder cap is axially translatable relative to the cylinder body within the frame between contact with the cylinder body and a percussion plate of the frame.

15. The muzzle-loading revolver of claim 14, wherein the axial translation of the cylinder cap is between .002 and .006 inch.

16. The muzzle-loading revolver of claim 11, wherein the projectile portion and the primer portion of each chamber are axially offset from one another to allow the firing pin to align with the hammer and the projectile portion to align with the barrel.

17. The muzzle-loading revolver of claim 16, wherein the primer portion and the propellant portion are axially aligned.

18. The muzzle-loading revolver of claim 11, further comprising a loading plate adapted to cover the primer portion openings on the breach end of the cylinder body upon removal of the cylinder from the frame and the cylinder cap from the cylinder body to facilitate muzzle loading of the cylinder body.

19. A method of muzzle loading a smokeless cylinder for use in a muzzle-loaded revolver, the cylinder including a cylinder body having a number of chambers therein and a cylinder cap having the number of firing pins positioned therein, comprising the steps of:

- removing the cylinder cap from a breach end of the cylinder body;
- placing a loading plate over the breach end of the cylinder body;
- orienting the cylinder body and loading plate assembly vertically such that a muzzle end of the cylinder body is above the breach end;
- pouring a pre-measured amount of smokeless gun powder into at least one of the chambers;
- placing a projectile into the at least one of the chambers;
- re-orienting the cylinder body and loading plate assembly vertically such that the breach end of the cylinder body is above the muzzle end;

removing the loading plate;  
inserting a primer into the at least one of the chambers; and  
re-installing the cylinder cap on the breach end of the cylinder body.

20. The method of claim 19, wherein the step of placing a projectile into the at least one of the chambers comprises the step of pressing the projectile into the at least one of the chambers until a shoulder within the chamber is contacted.